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Hétérogénéité cachée, uniformité forcée : quand les politiques agro-environnementales guident le développement familial – Cas de la réserve forestière de U Minh Thượng (delta du Mékong, Vietnam)

Heterogeneidad oculta, uniformidad forzada: cuando las políticas agro-ambientales impulsan el desarrollo familiar. La reserva del bosque de U Minh Thượng (delta del Mekong, Vietnam)

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Draped heterogeneity, forced uniformity. When agro-environmental policies drive family development: The U Minh Thượng forest reserve (Mekong delta, Vietnam)

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Abstract. The U Minh Thượng natural reserve was created during the 1990s with a surrounding buffer zone where 3,500 households have been settled between 1992 and 1995, each household on a lot of 4 hectares. From a social point of view, the settlers were selected as 'poor people' or war veterans. A social discrimination was slowly built in favour of the latter. Despite an apparent homogeneity, the environment shows slight variations which has huge effects on the potential of the lots. From 1992 to 1998, the provincial government applied uniformly different management policies, despite the fact that this repeated "new deal" of the variability among households and lots, produced various outcomes from total destruction to a real support to households. Finally, the support of international environmental non-governmental organizations enhanced a pro-nature hard-line that has affected farmers' livelihoods. This 'real world' social experiment enhances the necessity to at least understand the needs and constraints at a lower scale, especially for such a vast area.

Keywords. U Minh Thượng natural reserve, rural management scheme, agriculture, environment, Mekong delta, Vietnam

1 Introduction

The area of U Minh Thượng, located in the Mekong Delta and the southern part of Vietnam's Kiên Giang Province, is a relic of the former seasonally-inundated forest that covered the delta in the past. More specifically, it is a huge freshwater forested swamp composed mainly of one species of tree, *Melaleuca cajeputi* (Powel)[1]. From May to December, the forest is inundated by monsoon rainfalls and Mekong floods. From December to May, during the dry season, it is burnt by fires (Panousse-Perrin, 1955). One of the delta's biggest depressions, this area was the last to be colonized. In general, these relatively empty depressions are under heavy pressure from the twenty million inhabitants of the delta and the growing capacity of the government to engage in colonization activities. With the support of international environmental organizations, the Vietnamese government has instituted policies to promote environmental conservation and natural resource management through the creation of a combined structure. This structure consists of the U Minh Thượng natural reserve and a surrounding buffer zone where 3,500 families have been settled since 1993. The application of these policies on the ground has encountered numerous problems, the most important of which stem from the centralized and homogeneous character of environmental policy and management.

The purpose of this article is to distinguish the different factors that affect the disparate development of these families. Each factor alone has only a small effect, but together they contribute to very different trajectories. These factors are the soil, family origins, and the history of projects that were implemented in the reserve and the buffer zone.

2 Methodology

The overall research methodology was based on an iterative process between field investigations and discussions with experts. Understanding the development of the area was supported by a 6 month field investigation and participatory observation period in all the villages of the buffer zone several groups of villages and local organizations, similar to the investigation method described by Bogdan and Taylor (1975). Repetitions along interviews and cross-checking

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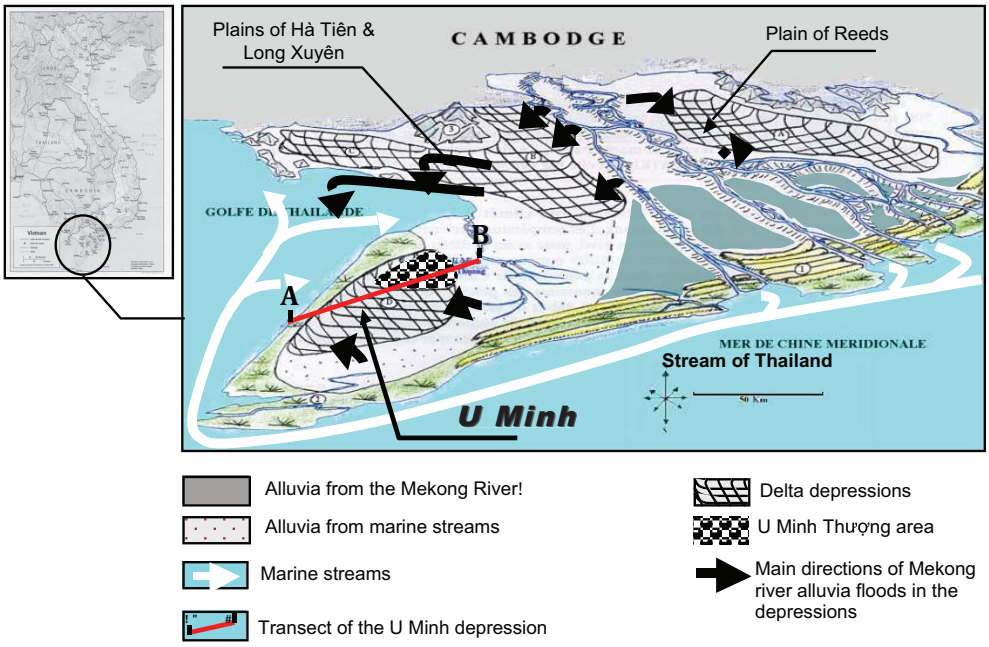

Figure 1. The U Minh depression in Mekong Delta.

between sources were the criteria used for validation, alongside with a comparison with the available published and unpublished literature.

Our strategy was to combine rather than juxtapose different disciplines in a single comprehensive model. We assumed that the success of a development intervention is not defined by its very characteristics but results from the villagers' perception of this intervention, whatever its intrinsic quality.

Several tools were assessed to analyse and evaluate the local situation of the at-that-time newly settled population of the buffer zone of the U Minh Thượng natural reserve:

1) An agro-ecological mapping of the area: all the canals of the buffer zone were visited by boat or by foot, interviewing the farmers we met on the spatial differences of yields, the rice varieties, the depth and the quality of the water along time and space and the length of the floods.

2) A local perception-based regional mapping (Saqalli, 1999; Saqalli *et al*. 2009). These maps, and the information collected for drawing them, allowed to identify the villagers' hierarchy of variables that characterize the biophysical and socio-economic environment.

3) Seventy five individual interviews across several villages of the buffer zone in the villages of Minh Tien, Minh Duong, Minh Kien, Minh Thanh and Minh Thuong (commune of Minh Thuan, East of the buffer zone) and An Thanh, An Hung and An Thoai (commune of An Minh Bac, West of the buffer zone), of which we conducted: (i) 4 interviews with elders from different areas on their perceptions of the history of their area development actions, (ii) 50 semi-direct interviews with farmers along a visit of his/her lot, and (iii) 21 questionnaires on the history and the productions of the farm

We also investigated the complex relationship between the development and conservation project and villagers, and assessing the practical implementation of development interventions. We tried to analyze these actions both from the project's point of view and the villagers' one, using a participatory observation approach. The best moment for observation appeared to be when both social groups met, during meetings, visits and interview times. We first used the project's official documents or documents coming from other projects as a mainframe to be confronted with unofficial expert communications and local situations.

The analysis of the development specialist's practices was done through different cross-checkable methods. 1) 8 villagers from different villages were re-interviewed on their personal relations with the development projects. These persons were selected on the basis of their gender and level of responsibility and their will to interact. 2) By staying in villages and remaining as unobtrusive as possible, our everyday presence allowed observing transactions and comments between villagers and development stakeholders (even if the presence of a foreigner is clearly disturbing) and so to have access to the interface between the project corpus and the village.

3 The Mekong Delta and the biophysical constraints and assets of the U Minh Depression

3.1 The Mekong delta and U Minh Thượng: a regularly flooded depression with acidic soils in surface and a hidden limestone layer

With four million hectares of its territory located in Vietnam, the Mekong delta was the historical "wild west" of the country and is still the groundbase of its future (Agret, 1993;

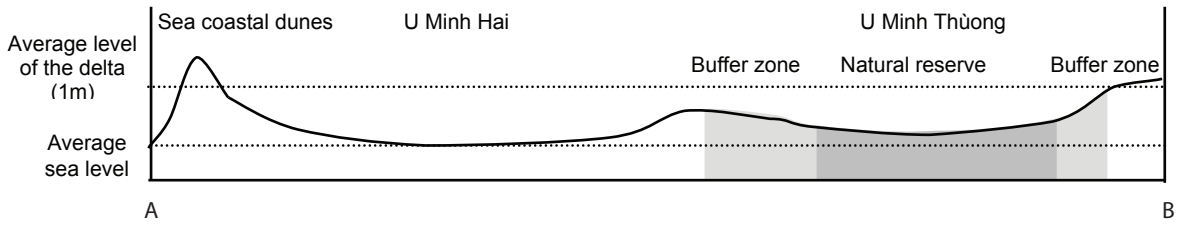

Figure 2. North-East / South-West transect of the U Minh depression (see A-B transect on Figure 1).

Thanh Truc *et al*., 2006). With the implementation of the *Đổi mới* economic policy, the resources of the delta allowed Vietnam to develop from a net importer of rice in 1978 to the world's second leading exporter in 1989 (De Vienne, 1994). The most important areas for rice cultivation are in the center of the delta. Over the span of 20 years, this area saw yields increase from one rice harvest annually to three, or even three and a half, harvests per year. The delta still has immense untapped potential, as half of the territory was colonized only after 1975, at the end of the wars (Thuan, 1994). These newly colonized territories are all physical depressions, i.e., former lagoons that were slowly locked within the Mekong's arms. Totaling 1.6 million hectares, these territories include the "Plain of Reeds" (0.5 million ha), the Long Xuyên quadrangle and the Trans-Bassac depression (0.4 million ha), and the Cà Mau peninsula (0.6 million ha) in the south of the delta (Koji, 2001) (Figure 1). This last area has the deepest depressions (up to 1.5 meters deep in some places in the U Minh area) and was the last to be colonized (Xuan and Matsui, 1998; Saqalli, 1999). The center of the depression corresponds roughly to the inner reserve and is the deepest part of the area. It is flooded during six months each year. The buffer zone surrounding the reserve is higher on average, but the altitude varies considerably (Saqalli and Dosso, 2003).

The U Minh Thượng has been partly deforested, mainly because of the cajuput's value. This tree does not rot, even when cut. It can be used for piles in very humid climates and forms the basements of all "pilotis" houses in the delta. Moreover, cajuput trees can absorb the acidity of water and soil (Luom, 1996).

3.1.1 Agricultural potential is affected by the character of surface and subsurface soils (pedology), as well as by floods.

Local soil variability, along with access to water, is the major determinant of the potential of any field or farm. Pedology denotes both surface soils that condition the capacity of a field to produce rice, and the hidden and deep layers of soil that condition the capacity of land to be used for fishponds and/or as terraces.

- The acid sulphate soils (ASS): These pyritic soils constitute most of the soils in the buffer zone and are positioned under the surface peaty layer in the inner natural reserve. Their features are revealed when the soil is exposed to the air. Oxidization of the soil frees a considerable amount of acidity; the pH level of the soil decreases until it is equal to, or lower than, 3. Yields, therefore, are very poor. During the oxidization phase, acidic water can spread to and contaminate surroundings areas. This occurs particularly during the first rains. When these soils are maintained under a layer of water, yields progressively improve, thanks to repeated washing of the soil (White *et al*., 1995).
- The peaty soils (Dat rùng: literally "forest soils"): These soils constitute the major part of the surface soils in the reserve (in the middle of the depression), with a depth varying from 0.5 to 2 meters (Huu Chiem, personal communication). They also cover a very interesting area along the buffer zone's interior border. The potentialities of these soils are superior to those of the ASS, thanks to an organic-matter content of greater than 15%. Peaty soils are the only soils that produce good yields during the first years of cultivation (3t of rice per ha). However, this advantage is quickly exhausted in two or three years, with rice yields dwindling to 0.8t per ha. These soils respond well to applications of nitrogen (urea) or phosphate.

3.1.2 The hidden limestone gamble

One may find throughout the whole zone of study a deep layer of limestone (of marine and other origins) at a depth of one to two meters, depending on local topography (Nguyen, 1993). During the construction of a field terrace and/or a fishpond, the shallow depth of the limestone layer is an asset. Indeed, a farmer who wants to build a terrace and/or a fishpond has to reach this layer to prevent acidification by the pyritic ASS layer. Therefore, from a developmental perspective, the depth of the calcareous layer is an important criterion of differentiation among farms. One should note that reaching this layer is difficult work (Nguyen, personal communication) and that there is no guarantee that the layer is shallow in any particular location.

3.1.3 A repeatedly flooded area

U Minh Thượng has an average altitude of 0.5 to 0.7 meters above sea level (Williams, 1997). A local actor's perception-based mapping procedure (Saqalli *et al*., 2009) was utilized to determine the average local variations of this altitude in the U Minh Depression. This procedure determined that the average altitude in the depression is actually 0.4 meters lower than

in the delta. Consequently, the depression receives all the water from the surrounding areas. These floods do not originate from the Mekong flood itself, but from rainfall. With an average annual precipitation of 2,000 mm, rainfalls alone are strong enough to flood the area. Because rain is irregular in timing and volume, sudden floods or delays are frequent. Floods in the depression occur at the beginning of the monsoon season long before they occur in the surrounding areas. The depression also empties more slowly in the dry season.

Moreover, by collecting water, the area accumulates the acidity washed from surrounding ASS soils. However, U Minh Thượng does possess what appear to be natural evacuation gates large enough (up to 20 m wide) to drain the water to more southerly and lower areas, such as U Minh Hai (Lower U Minh) province of Cà Mau.

Local topography determines the water volumes and levels in each villager's fields and the number of months this water remains. Topography also impacts the quality of this water; the higher the spot, the less it is washed by non-acid waters during floods and the shorter the time it is submerged. Finally, local topology may affect some lots in other ways. For instance, lots that are in close proximity to a gate experience a greater volume of acidic water coming from the surroundings at the beginning of the monsoon, but being close to a gate also facilitates the evacuation of water during monsoon floods.

4 U Minh: A history of conservation and agricultural settlement

4.1 From the end of the war until the creation of the reserve statute

U Minh was historically the name given to the entire area in the Ca Mau peninsula. It was a major stronghold of the so-called 'Việt Minh" and the 'Việt Cộng" National Liberation Front (NFL) resistance during the two wars against France and the United States (Biggs, 2005). The area was one of the areas that experienced the U.S. "Operation Ranch Hand" (1965-1972) defoliant sprayings of some 3 million hectares. These defoliants destroyed both forests and crops and created persistent dioxin pollution problems that have had long-lasting, harmful effects on health that continue to this day (Biggs *et al*., 2009). "Studies of the impacts of the defoliants estimated that 10% of trees sprayed were not only defoliated but killed by one application of Agent Orange, with a particularly strong effect on sensitive and ecologically important mangrove forests along the Mekong Delta. It was estimated that about 25% of the country's forests were sprayed more than once" (Orians and Pfieffer, 1970; Westing, 1971, Harwell, 2010). The impact of the wars and the fact that many NLF fighters and relatives, alongside with peasants, have survived and successfully settled during these wartimes is very important to understand the present-time history of the management of this area (Biggs, 2005).

At the end of the war, in 1976, the newly reunified government created the State Forestry Company no.113 of U Minh Thượng, in the Kiên Giang province, between the Cà Mau province northern border and the Rạch Giá River. In 1984, the first canal surrounding the whole forestry area was dug

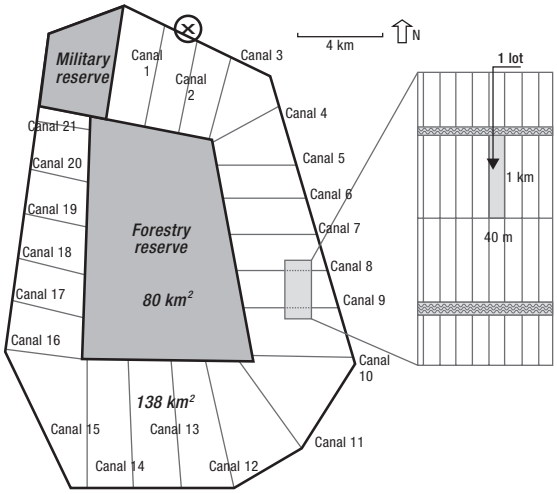

Figure 3. The U Minh Thượng area, with the buffer zone's 21 canals connecting the reserve with the surrounding areas.

to establish a visible boundary between the forestry company territory and the surrounding area. This canal was also dredged to improve the protection of the forest against annual fires and illegal wood cutting. As the area's wildlife and its status as an ancient climactic forest relic came to be acknowledged, a newly designated corps of forest guards (more than fifty in 1990) was also created to protect the site. An initial, external band of territory was assigned to the guards and their families for accommodation purposes, thereby creating a first "protection layer". However, forest protection measures were not sufficient to manage the huge fires that occur each dry season. These fires burn thousands of hectares annually and were particularly destructive in 1987 and 1988. Designated as a forestry reserve in 1988, the whole 218 km² territory was transferred in 1989 to the control of the D.A.R.D. (Department of Agriculture & Rural Development), through the newly instituted U Minh Thượng Management Committee (UMTMC). The territory was then split in 1992 into the central nature reserve and the surrounding buffer zone (Figure 3). At the present time, U Minh Thượng is the name assigned to the entire 218 Km² area:

- The SPZ (Special Protection Zone of 80 km²) was made a Natural Reserve in 1992 in accordance with the forestry law that regulates the management of provincial program 347. Forest management in the area became very strict, with the institution of fines, confiscations, warnings, etc., and the intensity of fires decreased.
- The buffer zone (138 km²) was designated a Socio-Economic Forest, even though the last forest relics had disappeared by 1985. A second wave of 20 forest guards was settled on lots along the canal between the forest reserve and the buffer zone (Williams, 1997).

4.2 The planned development of the buffer zone

In 1992, the buffer zone was defined as the protective halo of the reserve, and a colonization plan was developed to bring in 3,500 households from two population groups:

- The 'Việt Minh' and the 'Việt Cộng' NLF resistance veterans and war widows of "heroic families"[2] originating from the province or neighbouring provinces. Former administration members, soldiers and soldiers' widows, are favoured. No income criterion was officially instituted.
- Households that are listed as "poor" by the provincial administration. These people do not own land elsewhere. They are much younger than the preceding category. They represent 47% to 80% of the households in the buffer zone.

Lots were assigned randomly to households. Eighty-five percent of the lands were distributed in 1992 and 1993, with each household receiving a four hectare lot (40 meters wide along a radial canal and 1 km long, see figure 3) under a 50 year-renewable usufruct contract (1994 02/CP decree). The program was rapidly deployed from 1992 until 1995, when the distributions were ended. New households were integrated into the local administration through newly instituted hamlets[3] that fell under the administration of the contiguous communes (An Minh Bac and Minh Thuan). Program 347 initially regulated the utilization of lots as follows: three hectares were to be planted with cajuput trees and one hectare was to be used as a rice field. This scheme was changed in 1994 to a two cajuput hectares – two rice field hectares scheme. At that time, no directive was given on the disposition of the rice fields and tree plantings, allowing the settler to adapt the placement of plantings and rice fields to local conditions. Planting cajuput trees was to be compensated at 39.3 US$/ha. Actually, very few settlers were compensated because the compensation fund was rapidly exhausted. This development meant that only those farmers who had the financial means to plant rapidly were reimbursed. These were mostly "veterans". Meanwhile, the official planting program in the inner reserve was quite successful. Forestry matters were given a higher priority and more funds in the nature reserve, spurring activity that helped the forest recover quickly.

In 1997, new instructions were issued. The two hectare cajuput plantings were to be placed at the back of the lot and the rice fields located immediately behind the residential area (Figure 4). This scheme was imposed on the poorest farmers, who were unable to plant trees and rice crops during the previous years. They lost their flexibility to adapt to local conditions, as the area in the back of their holdings may have been better adapted to rice fields. Until 1999, for "protection" purposes, farmers were not allowed to go inside their "own" plantations. This policy officially forbade them from obtaining any products from their holdings, such as honey, firewood, fish, etc. (Hai, 1998).

[2] Heroic families refer to families in which at least one member was killed during the wars because of his/her actions against the Americans and the South Vietnamese government. All these particular people are subsequently deemed "veterans" in the manuscript.
[3] The smallest administrative unit, corresponding to one or several canals. It is neither a territorial nor a social unit.

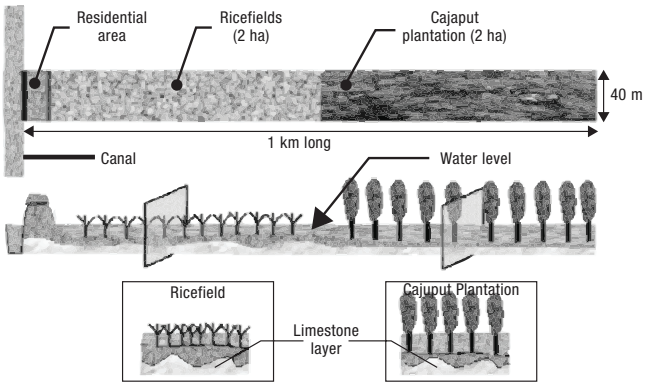

Figure 4. The official land use scheme of the UMTMC until 1999.

4.3 1998: Eight types of divergent trajectories

Despite the imposition of the successive models of agricultural development on all the households, eight types of divergent trajectories were evident by 1999. These were conditioned by the combination of two main factors that created rapid differentiation among the 3,500 households settled in the buffer zone:

- The biophysical environment: variable characteristics at the lot level remain paramount for the maintenance of a household. These characteristics include the height and duration of the flood, the nature of the subsurface soils and the depth of the limestone layer.
- The social status of the settlement: veterans and equivalent households are advantaged in several areas:
  - Better investment capacities: veteran families are usually richer. Moreover, because their admission to this land program was not conditioned by the "no-land" criterion, many own land parcels elsewhere. Such ownership means that they have more crops to use and to sell, as well as access to mortgages on these land parcels and loans from official banks for investment purposes.
  - Better connections with officials: with a far better reputation than the "poor ones", they enjoy priority for all low-interest loans from government programs, either national or provincial.
  - More available manpower: as veteran families are generally older, they have more children. Because manpower is essential for cultivating rice, this is an important differentiating factor among households.

Finally, despite the initial intent to launch an egalitarian development program, social and environmental contexts favored the emergence of a "richer" social class. This socio-economic disparity, together with the heterogeneity of the environment, explains the very disparate household situations we find. This combination is summarized in the Table 1 below:

However, these socioeconomic dynamics were upset by the implementation of new management policies in the U Minh Thượng area.

Table 1. Evolution of the eight farm types in the U Minh Thượng buffer zone until 1999.

	Veterans, local officials, etc.	**The 'no-advantaged' ones**
Very 'low' areas	1: fixed or ambulant trading Gardeners on small terraces	2: Lot seizure by private creditors, day labouring, gathering; ➔Disappearance as a farm unit
'low' areas	3: Rice farming with an important diversification: Rice (1 to 2 harvests/year), fruit trees, small animal keeping	4 : Rice farming (1 harvest/year); diversification trials (fruit trees, small animal keeping), day labouring
'high' areas	5: Diversified farming: Rice (2 harvests/year), Cash crops, small animal keeping, fruit trees; Possibly, hiring of motorized material	6 : Rice farming (1 to 2 harvests/year), small diversification trials: cash crops, small animal keeping, fruit trees
Very 'high' areas (rare spots)	7: Perennial plantations with no necessary maintenance (eucalyptus); fixed or ambulant traders, coffee shop	8: Abandonment of the lot, migration ➔Disappearance as a farm unit

4.4 Mixing international and national development, ecology, and rural development

In 1998-99, the non-governmental organization CARE involved itself in the area by launching a loan program for households in the buffer zone. The objective was to increase income levels and diversify economic activities, while reducing the need for the non-timber forest products families harvested on their own cajuput plantations and in the inner forest reserve (where the fish are bigger and the honey yields are larger). The loans were mainly designed to support the construction of fishponds and cropping terraces for households. A preliminary study conducted by this new, wealthy NGO partner of the UMTMC acknowledged the increasing socio-economic disparity among families. In response, the provincial government created a development scheme in July of 1998. The UMTMC was to be in charge of implementing this scheme uniformly across the buffer zone (Figure 5).

However, this scheme soon ran up against the variability of the biophysical conditions at the lot level. On each lot, a 1km long fishpond was uniformly dredged at a depth of 1.5 meters, and the dredged soil was used to build a terraced field. However, the depth of the marine sediment limestone layer in the area varies from one to two meters. If this layer is reached during the dredging, both the basin bottom and the terrace surface will be covered by limestone, thereby allowing productive activity to take place in both locations. In other cases, when the limestone layer was not reached, ASS on the terrace released their acidity, ruining the products of both fishponds and terraces. Thus, depending on the character of this relationship between the depth of the limestone layer and the dredging level, one household could take advantage of these activities for both fish farming and rice cultivation, while another lost productive use of half of its lot's surface. Moreover, acidic terraces released such large quantities of acid that it was impossible to keep livestock on many affected lots, as the animals died very easily.

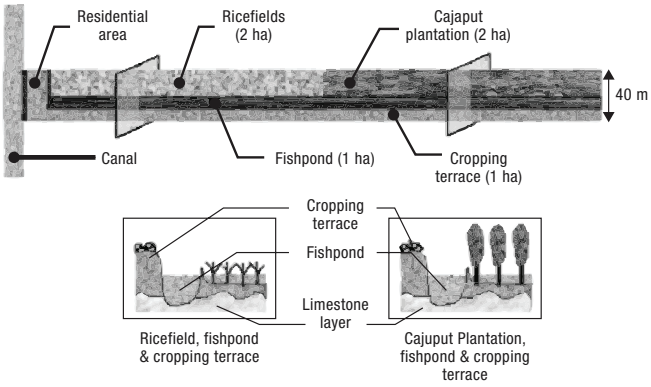

Figure 5. UMTMC's official land use scheme after 1999.

The second recommendation of the NGO concerned the forest planting program within the inner reserve. Since these plantations were created without pruning shrub trees or creating fire protection corridors, they actually increased the intensity of the dry season fires. The UMTMC found an easy solution to this problem. In 1999, using various gauges, valves and gates separating the U Minh Thượng area from neighboring areas, they maintained a 0.3 meter layer of water over the whole area, as there were no valves or gates between the inner reserve and the buffer zone at that time. The whole area was artificially submerged under this layer of water, completely ruining the agricultural potential of many farms. This disruption of the patterns of farm development for the theoretical benefit of the inner reserve can be conceived as a new deal overlaying the eight types of development we previously identified (see Table 2).

Table 2 shows that differentiation and exclusion grew as time passed. but also a large diversification of the situations between "lucky" and "unlucky" farmers, i.e. with a shallow limestone layer and a "relative altitude" that convened to this new water level. Households whose lots benefitted from the

Table 2. Development of the eight farm types in the U Minh Thượng buffer zone after 1999.

	Veterans, local officials, etc.	**The 'no-advantaged' ones**
Flooded areas with accessed limestone layer	1A: Fixed or ambulant trading, coffee shops, gardening on field terraces, fishpond farming	2A: Gardening on field terraces, fishpond farming, day labouring, gathering
Flooded areas without accessed limestone layer	1B : Fixed or ambulant trading, coffee shops	2B : lot abandonment & migration ➔Disappearance as a farm unit
Very low areas with accessed limestone layer	3A: Fixed or ambulant trading, coffee shops, gardening on field terraces, fishpond farming	4A: Gardening on field terraces, fishpond farming, day labouring, gathering
Very low areas without accessed limestone layer	3B: Fixed or ambulant trading, coffee shops	4B: lot abandonment & migration ➔Disappearance as a farm unit
Low areas with accessed limestone layer	5A: Diversified farming: Rice (1 to 2 harvests/year), Cash crops & gardening on field terraces, fishpond farming, fruit trees, small animal keeping; Rapid purchase of a water pump	6A: Rice farming (1 to 2 harvests/year), small diversification trials: cash crops, small animal keeping, fruit trees, gardening on field terraces, fishpond farming
Low areas without accessed limestone layer	5B: Diversified farming: Rice (1 to 2 harvests/year), small animal keeping; Purchase of a water pump, renting motorized materials; Fixed or ambulant trading, coffee shops	6B: Rice farming (1 to 2 harvests/year), small animal keeping
High areas with accessed limestone layer (rare)	7A: Relance de l'agriculture Rice (1 to 2 harvests/year), Cash crops & gardening on field terraces, fishpond farming, fruit trees, small animal keeping; Fixed trading, coffee shops; wood tree plantation maintained (eucalyptus)	8A: Return on the lot Rice farming (1 to 2 harvests/year), fishpond farming, fruit trees, small animal keeping; small trials of cash cropping and gardening on terraces
High areas without accessed limestone layer (rare)	7B : reinvestment in agriculture (1 to 2 harvests/year); Fixed trading, coffee shops; wood tree plantation maintained (eucalyptus)	8B: Return on the lot Rice farming (1 to 2 harvests/year), wood tree plantation

artificial flood are rarer than those that had their farms submerged and were forced to focus on trade and terrace gardening. These management and development policies provoked riots in the most negatively affected canal areas. These riots were suppressed by the forest guards of the UMTMC. These events actually helped the UMTMC be confirmed as the official authority over all the buffer zone, thus concentrating in its hands both police powers and the management of the CARE funds for the new terrace/fish-pond project. Riots mainly involved households belonging to the 4➔4B trajectory (Table 1 and 2), which encompasses large numbers of the lots situated along canals 4 & 5 and canal 2 (Figure 3).

4.5 Subsequent developments

The UMTMC has maintained control over the area. To enhance both the income of farmers and the protection of the reserve, CARE consultants and officers have suggested several measures:

1. Installation of a valve system to separate water fluxes in the inner reserve from the hydrological network of the buffer zone. This system will facilitate flexible management of the reserve's water level without affecting farmers.
2. The modulation of the depth of dredging so that the limestone layer is always reached.
3. A modification of water levels to use the deacidizing properties of the cajuput forest (Saqalli, 1999; Saqalli and Dosso, 2003). This last proposition was coming from a group of farmers and discussed with researchers of Can Tho University, the most important agricultural university in the Mekong Delta. Vietnamese researchers still plead for more research on local hydrology (Thanh Truc *et al*., 2006). Because such plans were not included in the provincial program, none have been implemented and the situation remains the same.
4. Because cajuput trees were very densely sown in the plantations of the buffer zone, and because no pruning was allowed, forest plantations have not grown very quickly. Allowing pruning may let the remaining trees grow, thereby providing a sufficient supply of firewood as an alternative to firewood cut from the inner forest and the expensive rice bran people buy.

5. Farmers were not allowed to remove forest products from their own plantations. These products are good alternatives to the products of the inner forest.

The inner reserve has received additional attention from international and national actors. The reserve was declared a national park and a wildlife interest national center (Safford *et al*. 1998; Triet, 2000). Apart from CARE, several other environmental NGOs have supported the protection of the reserve's wildlife, such as Birdlife International (Birdlife International, 2001). Meanwhile, as noted by Biggs (2005), "agencies and conservation groups have yet to develop a means of managing the wetlands nature of U Minh, having focused almost solely on managing trees. This tendency of saving trees at the expense of other forest life, especially aquatic life, stems from colonial forestry traditions in Vietnam and more globally". Moreover, even with the additional water in 1999, severe droughts have occurred during particularly harsh dry seasons. In 2002, 2,700 ha burned in the inner reserve, representing more than 40% of the total forest (Biggs, 2005; Thanh Truc *et al*., 2006), thereby putting in question the efficacy of such a radical measure.

5 Conclusion

These dramatic events illustrate how theoretical and ideological postulates (land for all, a uniform and equitable development scheme for all, and a safe future for all households) were contradicted by reality. The government's initial objectives were environmental and economic in character. Note that these objectives were strictly segregated. The forest is managed separately, while the buffer zone management is separated into a terrace and fish pond program, a rice field program, and so forth. Yet, farmers have settled in an environment where all these elements are mixed together. All elements are juxtaposed and no coordination is possible among them. In opposition with the former peasantry involvements in the colonization of the area, settlers were not involved in the management scheme elaboration and implementation. Moreover, land tenure is restricted to a usufruct contract that does not secure the access to land.

Finally, when environmental and agricultural goals clashed, the existence of a solitary decision-making power with a single purpose (reaching the provincial program's objectives) had a dramatic impact: the agricultural sector was sacrificed to protect the environment.

The active intervention of international pro-environmental organizations in the area has harmed some households, as forest guards have been prompted to view their members as potential illegal poachers (Saqalli, 1999).[4] The program that the group of farmers of canals 2 has proposed, in contrast, combines hydrology, agriculture capacity, attempts to produce clean water, and forestry. It is an alternative to, and a more holistic approach than the authorities' pro-conservationist position.

One must therefore question the ambition of such a large, uniform developmental and environmental program in so vast a territory. In the end, wherever it is located and despite what environmental organizations may argue, a territory and its population constitute a single human and ecological system, but with inherent and obvious natural and human variations.

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